

(Note 16 continued)

(1) Includes purchase accounting adjustments associated with GM's purchase of Hughes Aircraft Company of \$122.3 million in 1996 (\$21.0 million, \$100.9 million, and \$0.4 million related to Telecommunications and Space, Aerospace and Defense Systems, and Corporate and Other, respectively), \$123.4 million in 1995 (\$21.0 million, \$100.9 million, and \$1.5 million related to Telecommunications and Space, Aerospace and Defense Systems, and Corporate and Other, respectively), and \$123.8 million in 1994 (\$21.0 million, \$100.9 million, and \$1.9 million related to Telecommunications and Space, Aerospace and Defense Systems, and Corporate and Other, respectively).

(2) Identifiable assets include the unamortized purchase accounting adjustments associated with the purchase of Hughes Aircraft Company as detailed below:

	Telecommunications & Space	Aerospace and Defense Systems	Corporate and Other	Total
1996	\$ 468.0	\$ 2,247.8	\$ 7.7	\$ 2,723.5
1995	489.0	2,348.7	8.1	2,845.8
1994	510.0	2,449.6	45.7	3,005.3

(3) Telecommunications and Space includes expenditures related to telecommunications and other equipment amounting to \$187.9 million, \$274.6 million, and \$255.8 million in 1996, 1995, and 1994, respectively.

A reconciliation of operating profit shown on the preceding page to Income before Income Taxes shown in the Consolidated Statement of Income and Available Separate Consolidated Net Income follows:

(Dollars in Millions)	1996	1995	1994
Operating Profit	\$ 1,472.0	\$ 1,543.9	\$ 1,506.6
Other Income - net	173.8	57.5	37.1
Interest Expense - net	(11.2)	(7.5)	(15.1)
Income before Income Taxes	\$ 1,634.6	\$ 1,593.9	\$ 1,528.6

Export sales from the U.S. were as follows:

(Dollars in Millions)	1996	1995	1994
Africa	\$ 42.2	\$ 25.4	\$ 25.8
Asia	1,168.1	948.9	758.2
Canada	721.3	861.8	876.3
Europe	1,296.8	929.4	678.6
Mexico	196.2	143.4	96.9
Other Latin America	115.5	76.0	90.3
Middle East	250.9	327.0	370.1
Total	\$ 3,791.0	\$ 3,311.9	\$ 2,896.2

NOTE 17: COMMITMENTS AND CONTINGENCIES

Hughes signed agreements in 1995 and 1996 to procure commercial satellite launches, a significant number of which are expected to be used in connection with satellites ordered by outside customers. The agreements provide for launches beginning in 1998 and also contain options for additional launch vehicles. The total amount of the commitment, which is dependent upon the number of options exercised, market conditions, and other factors, could exceed \$2 billion.

In December 1994, Hughes entered into an agreement with Computer Sciences Corporation (CSC) whereby CSC provides a significant amount of the non-automotive data processing services required by Hughes. Baseline service payments to CSC are expected to aggregate approximately \$1.5 billion over the term of the eight-year agreement. The contract is cancelable by Hughes with substantial early termination penalties.

Minimum future commitments under operating leases having noncancelable lease terms in excess of one year, primarily for real property and satellite transponders, aggregating \$2,552.5 million, are payable as follows: \$274.8 million in 1997, \$244.5 million in 1998, \$265.9 million in 1999, \$289.7 million in 2000, \$208.8 million in 2001, and \$1,268.8 million thereafter. Certain of these leases contain escalation clauses and renewal or purchase options. Rental expenses under operating leases were \$279.4 million in 1996, \$257.9 million in 1995, and \$306.2 million in 1994.

Hughes has issued or is a party to various guarantees and letter of credit agreements totaling \$813.4 million at December 31, 1996. In the Company's past experience, virtually no claims have been made against these financial instruments.

Hughes and its subsidiaries are subject to potential liability under government regulations and various claims and legal actions which are pending or may be asserted against them. The aggregate ultimate liability of Hughes and its subsidiaries under these government regulations, and under these claims and actions, was not determinable at December 31, 1996. In the opinion of management of Hughes, such liability is not expected to have a material adverse effect on Hughes' consolidated operations or financial position.

Hughes has maintained a suit against the U.S. Government since September 1973, regarding the Government's infringement and use of a Hughes

patent (the "Williams Patent") covering "Velocity Control and Orientation of a Spin Stabilized Body," principally satellites. On June 17, 1994, the U.S. Court of Claims awarded Hughes damages of \$114 million. Because Hughes believed that the record supported a higher royalty rate, it appealed that decision. The U.S. Government, contending that the award was too high, also appealed. On June 19, 1996, the Court of Appeals for the Federal Circuit affirmed the decision of the Court of Claims which awarded Hughes \$114 million in damages, together with interest. The U.S. Government petitioned the Court of Appeals for the Federal Circuit for a rehearing. That petition was denied in October of 1996. The U.S. Government has filed a petition with the U.S. Supreme Court seeking certiorari. In the opinion of management of Hughes, there is a reasonable possibility that this matter could be resolved in the near term. While no amount has been recorded in the financial statements of Hughes to reflect the \$114 million award, a resolution of this matter could result in a gain that would be material to the earnings of General Motors attributable to Class H common stock.

NOTE 18: SUBSEQUENT EVENT

On January 16, 1997, GM and Hughes announced a series of planned transactions that would impact the defense electronics, automotive electronics and telecommunications and space businesses of Hughes. The transactions would include:

- The tax-free spin-off, of 100% of the Hughes defense business, to holders of GM's \$1-²/₃ par value and Class H common stocks;
- The tax-free merger of the Hughes defense business with Raytheon Company (Raytheon) immediately following the spin-off, after which there would be outstanding two classes of Raytheon/Hughes defense common stock;

- The transfer of Delco Electronics (Delco), the automotive electronics subsidiary of Hughes, from Hughes to GM's Delphi Automotive Systems and a reallocation of the derivative interest in the earnings of Delco currently held by Class H common stockholders to holders of \$1- $\frac{2}{3}$ par value common stock; and

- The recapitalization of Class H common stock into a tracking stock linked to the telecommunications and space business of Hughes. GM would continue to own 100% of Hughes, which would hold and operate its existing telecommunications and space business.

The distribution of stock in the Hughes defense business to holders of GM Class H and \$1- $\frac{2}{3}$ par value common stock would be in a ratio that would be determined by GM's Board of Directors to be fair to both classes of stockholders and would reflect: (1) a pro rata spin-off of the Hughes defense business to holders of GM Class H and \$1- $\frac{2}{3}$ par value Class H common stock; (2) a partial reallocation of the Hughes defense business from holders of GM \$1- $\frac{2}{3}$ par value common stock to holders of Class H common stock in exchange for the derivative interest in the earnings of Delco currently held by the Class H stockholders; and (3) other effects and factors relating to the planned transactions. Such a distribution ratio will be set by GM's Board of Directors at a time closer to GM's distribution of the solicitation statement/prospectus pursuant to which GM stockholders will be asked to approve the transactions.

The planned transactions are subject to approval by holders of GM \$1- $\frac{2}{3}$ par value and Class H common stock. In addition, the merger of the Hughes defense business with Raytheon, which is contingent upon the spin-off of the Hughes defense business, is subject to approval by the stockholders of Raytheon. The planned transactions also are subject to a variety of regulatory approvals and actions, including

anti-trust clearance and receipt of rulings by the Internal Revenue Service that the spin-off of the Hughes defense business would be tax-free to GM and its stockholders.

The spin-off is not being proposed in a manner that would result in a recapitalization of Class H common stock into \$1- $\frac{2}{3}$ par value common stock at a 120% exchange ratio, as currently provided for under certain circumstances in GM's Restated Certificate of Incorporation, as amended.

No assurances can be given that the above transactions will be completed; however, management of GM and Hughes and GM's Board of Directors expect to solicit stockholder approval during late 1997, after certain conditions are satisfied.

S SUPPLEMENTAL INFORMATION

SELECTED QUARTERLY DATA (UNAUDITED)

(Dollars in Millions Except Per Share Amounts)

	1996 Quarters				1995 Quarters			
	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Revenues	\$3,736.7	\$4,062.5	\$3,822.6	\$4,296.1	\$3,578.8	\$3,723.6	\$3,441.3	\$4,028.1
Income before income taxes	\$ 472.5	\$ 448.3	\$ 366.2	\$ 347.6	\$ 403.3	\$ 436.3	\$ 310.6	\$ 443.7
Income taxes	191.4	172.3	144.7	97.3	165.4	178.8	121.6	179.8
Net income	\$ 281.1	\$ 276.0	\$ 221.5	\$ 250.3	\$ 237.9	\$ 257.5	\$ 189.0	\$ 263.9
Earnings used for computation of available separate consolidated net income	\$ 311.7	\$ 306.6	\$ 252.0	\$ 280.9	\$ 268.9	\$ 288.4	\$ 256.1	\$ 294.4
Average number of shares of General Motors Class H common stock outstanding (in millions)	97.4	98.2	98.8	99.3	94.2	95.4	95.9	96.5
Class H dividend base (in millions)	399.9	399.9	399.9	399.9	399.9	399.9	399.9	399.9
Available separate consolidated net income	\$ 76.0	\$ 75.2	\$ 62.3	\$ 69.8	\$ 63.3	\$ 68.8	\$ 61.4	\$ 71.1
Net earnings attributable to General Motors Class H common stock on a per share basis	\$0.78	\$0.77	\$0.63	\$0.70	\$0.67	\$0.72	\$0.64	\$0.74
Stock price range of General Motors Class H common stock								
High	\$63.38	\$68.25	\$61.38	\$59.25	\$41.75	\$41.63	\$42.75	\$50.00
Low	\$45.00	\$57.50	\$53.13	\$49.50	\$33.25	\$37.75	\$39.13	\$39.50

Selected Financial Data (UNAUDITED)

(Dollars in Millions Except Per Share Amounts)

	1996	1995	1994	1993	1992
Revenues	\$15,917.9	\$14,771.8	\$14,099.4	\$13,517.5	\$12,297.1
Earnings (Loss) used for computation of available separate consolidated net income (loss)	\$ 1,151.2	\$ 1,107.8	\$ 1,049.2	\$ 921.6	\$ (921.6)
Average number of shares of General Motors Class H common stock outstanding (in millions)	98.4	95.5	92.1	88.6	75.3
Class H dividend base (in millions)	399.9	399.9	399.9	399.9	399.9
Available separate consolidated net income (loss)	\$ 283.3	\$ 264.6	\$ 241.6	\$ 204.5	\$ (142.3)
GM Class H cash dividends	\$ 94.4	\$ 87.9	\$ 73.8	\$ 64.1	\$ 53.3
Dividend payout ratio ⁽¹⁾	35.7%	36.4%	36.0%	N/A	51.0%
Earnings (Loss) attributable to General Motors Class H common stock on a per share basis before cumulative effect of accounting changes	\$2.88	\$2.77	\$2.70	\$2.30	\$(0.11)
Earnings (Loss) attributable to General Motors Class H common stock on a per share basis after cumulative effect of accounting changes	\$2.88	\$2.77	\$2.62	\$2.30	\$(2.29)
Capital expenditures ⁽²⁾	\$ 840.2	\$ 820.3	\$ 746.3	\$ 580.0	\$ 558.5
Cash and cash equivalents	\$ 1,161.3	\$ 1,139.5	\$ 1,501.8	\$ 1,008.7	\$ 702.7
Working capital	\$ 2,879.4	\$ 2,502.0	\$ 2,695.5	\$ 2,165.2	\$ 1,692.4
Total assets	\$16,480.1	\$15,974.4	\$14,850.5	\$14,117.1	\$14,209.2
Long-term debt and capitalized leases	\$ 34.5	\$ 258.8	\$ 353.5	\$ 416.8	\$ 711.0
Return on equity* ⁽³⁾	11.6%	11.5%	12.1%	11.3%	(13.9%)
Income (Loss) before interest and taxes as a percent of capitalization ⁽⁴⁾	18.3%	18.7%	19.0%	18.0%	(2.3%)
Pre-tax return on total assets ⁽⁵⁾	10.1%	10.3%	10.6%	9.7%	(1.8%)

* Includes unfavorable cumulative effect of accounting changes of \$30.4 million in 1994 and \$872.1 million in 1992.

(1) GM Class H cash dividends divided by available separate consolidated net income for the prior year.

(2) Includes expenditures related to telecommunications and other equipment amounting to \$187.9 million, \$274.6 million, \$255.8 million, \$131.1 million, and \$101.6 million in 1996, 1995, 1994, 1993, and 1992, respectively.

(3) Net Income (Loss) divided by average stockholder's equity (General Motors' equity in its wholly-owned subsidiary, Hughes). Holders of GM Class H common stock have no direct rights in the equity or assets of Hughes, but rather have rights in the equity and assets of GM (which includes 100% of the stock of Hughes).

(4) Income (Loss) before interest and taxes divided by average stockholder's equity plus average debt.

(5) Income (Loss) before Income Taxes divided by average total assets.

GM Has Two Classes of Common Stock

This annual report is prepared for the benefit of holders of General Motors Corporation ("GM") Class H common stock. GM has two classes of common stock, Class H (ticker symbol GMH) and \$1-2/3 par value (ticker symbol GM). Holders of Class H common stock have no direct rights in the equity or assets of Hughes Electronics Corporation (Hughes), but rather have rights in the equity and assets of GM, which includes 100 percent of the stock of Hughes. For purposes of determining the approximate earnings per share attributable to Class H common stock for financial reporting purposes, an investor may divide the quarterly Hughes earnings allocated to Class H common stock (the Available Separate Consolidated Net Income of Hughes) by the weighted-average number of shares of Class H common stock outstanding during such quarter. Earnings per share of GM \$1-2/3 par value common stock are calculated on the consolidated earnings of GM excluding the aggregate earnings attributed to the outstanding shares of Class H common stock.

Class H is a GM Stock with Dividend Payments Linked to the Performance of Hughes

Class H common stock, which is issued by GM, is designed to provide holders with financial returns based on the performance of Hughes and not the performance of any other GM subsidiaries, divisions, or operations. The current dividend policy of the GM Board of Directors is to pay quarterly dividends on Class H common stock at an annual rate equal to approximately 35 percent of the Available Separate Consolidated Net Income of Hughes for the prior year as described herein. The Board may change dividend practices and policies with respect to Class H common stock, or any other class of GM common stock, at any time.

Earnings Attributable to Class H Stock are Not Affected by Hughes Aircraft Company Acquisition Intangibles

The Hughes Consolidated Statement of Income reflects amortization and adjustment of purchase accounting adjustments arising from GM's acquisition of Hughes Aircraft Company in 1985 of \$122.3 million in 1996, \$159.5 million in 1995 and \$123.8 million in 1994. Also, \$2.7 billion and \$2.8 billion, respectively, of related unamortized intangible assets are included in the December 31, 1996 and 1995 Consolidated Balance Sheet. GM's Certificate of Incorporation provides that, in calculating the amount available for payment of dividends on Class H stock (which amount is also used to calculate the earnings attributable to Class H stock on a per share basis), amortization and adjustment of the excess purchase price for the acquisition of Hughes Aircraft Company will not be charged against the earnings of Hughes. For purposes of calculating the amounts available for payment of dividends on Class H stock and on the \$1-2/3 par value stock, amortization and adjustment of such purchase accounting adjustments is charged against the amounts available for the payment of dividends on GM's \$1-2/3 par value stock, not the Class H stock. This annual report also provides supplemental data that enables readers to review the financial performance of Hughes, excluding amortization and adjustment of GM purchase accounting adjustments related to Hughes Aircraft Company.

**Not a part of the Notes to Consolidated Financial Statements.

BOARD OF DIRECTORS

C. Michael Armstrong
Chairman of the Board
and Chief Executive Officer
Hughes Electronics Corporation

Charles T. Fisher, III
Retired Chairman and President
NBD Bancorp Inc.

*AUDIT COMMITTEE
EXECUTIVE COMPENSATION COMMITTEE*

J. Michael Losh
Executive Vice President
and Chief Financial Officer
General Motors Corporation
AUDIT COMMITTEE

Charles H. Noski
Vice Chairman
and Chief Financial Officer
Hughes Electronics Corporation

Harry J. Pearce
Vice Chairman
General Motors Corporation

Edmund T. Pratt, Jr.
Chairman Emeritus
Pfizer Inc.
*CHAIRMAN, EXECUTIVE COMPENSATION
COMMITTEE*

John F. Smith, Jr.
Chairman of the Board,
Chief Executive Officer
and President
General Motors Corporation

Michael T. Smith
Vice Chairman
Hughes Electronics Corporation

Thomas H. Wyman
Senior Advisor SBC Warburg Inc.,
Former Chairman
of the Board, CBS Inc.
*CHAIRMAN, AUDIT COMMITTEE
EXECUTIVE COMPENSATION COMMITTEE*

HUGHES OFFICERS

C. Michael Armstrong
Chairman of the Board
and Chief Executive Officer

Charles H. Noski
Vice Chairman
and Chief Financial Officer

Michael T. Smith
Vice Chairman

Steven D. Dorfman
Executive Vice President

John C. Weaver
Executive Vice President

Roxanne S. Austin
Senior Vice President,
Treasurer and Controller

Gareth C.C. Chang
Senior Vice President

John J. Higgins
Senior Vice President
and General Counsel

Jack A. Shaw
Senior Vice President

Ted G. Westerman
Senior Vice President

David R. Barclay
Vice President

Kenneth N. Heintz
Vice President

Calvin J. Kirby
Vice President

William D. Merritt
Vice President

Wanda K. Denson-Low
Secretary

**GM CLASS H COMMON
STOCKHOLDER INFORMATION**
Market prices of General Motors Class H
common stock ranged from \$45.00 to
\$68.25 during calendar year 1996.
The number of holders of record of
GM Class H common stock as of
December 31, 1996, was 247,782.

**TRANSFER AGENT AND GM
CLASS H STOCK REGISTRAR**
Bank of Boston
c/o Boston Equiserve, L.P.
General Motors
Shareholder Services
P.O. Box 9254
Boston, Massachusetts
02205-9254
(800) 331-9922
<http://www.equiserve.com>

INDEPENDENT AUDITORS
Deloitte & Touche LLP
1000 Wilshire Boulevard
Los Angeles, California
90017-2472

INVESTOR RELATIONS
GM CLASS H STOCK
c/o Hughes Electronics Corporation
P.O. Box 80028
7200 Hughes Terrace
Los Angeles, California
90080-0028
(310) 568-7868

MEDIA RELATIONS DEPARTMENT
Hughes Electronics Corporation
P.O. Box 80028
7200 Hughes Terrace
Los Angeles, California
90080-0028
(310) 568-6324

STOCK DATA
Ticker Symbol: GMH
Listed on the New York Stock Exchange.

INTERNET
View this Annual Report and other
Hughes Electronics information on our
World Wide Web site at
<http://www.hughes.com>

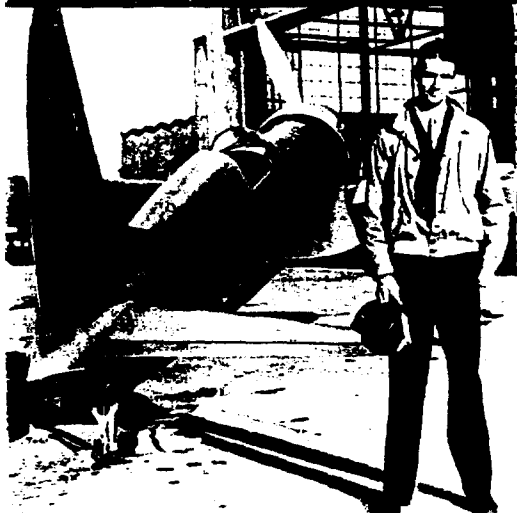
HUGHES

ELECTRONICS

HUGHES ELECTRONICS CORPORATION

P.O. BOX 80028

LOS ANGELES, CA 90080-0028



First RADAR ANTENNA Produced at HUGHES Sept. 28, 1949 Returned for SERVICE

Photo by Chuck Brenkus
finished. Examining
it went into
Vice Presi.
Ramo

DECLARATION OF SCOTT B. TOLLEFSEN

I, Scott B. Tollefsen, hereby declare under penalty of perjury that:

1. I am a Vice President of Hughes Communications, Inc.
2. The foregoing is a true and correct copy of the consolidated financial statement of Hughes Electronics Corporation (a parent company of Hughes Communications, Inc.) for the year ended December 31, 1996, including the report of Deloitte & Touche LLP, the company's independent certified public accountants, as published in the 1996 annual report of Hughes Electronics Corporation.

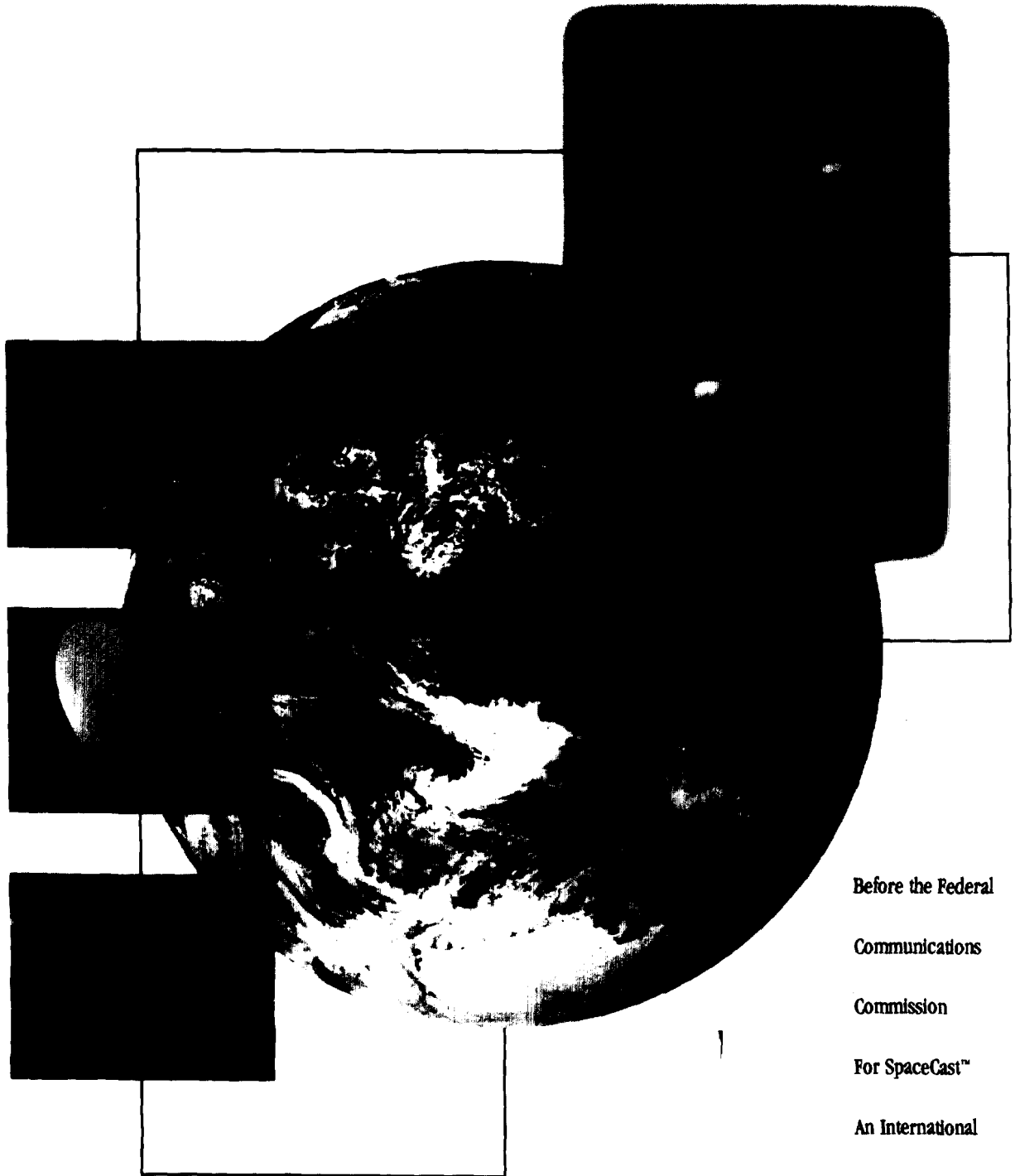


Scott B. Tollefsen

Dated: September 22, 1997



Application of Hughes Communications, Inc.



Before the Federal
Communications
Commission
For SpaceCast™
An International
Multimedia
Satellite System

September 1, 1997

HUGHES
COMMUNICATIONS
A HUGHES ELECTRONICS COMPANY
We Make Ideas Happen®

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

Application of
HUGHES COMMUNICATIONS, INC.
for

Authority to Launch and Operate

SpaceCast™

An International Multimedia Satellite System

September 1997

Jerald F. Farrell
President
Hughes Communications, Inc.

Gary M. Epstein
John P. Janka
Arthur S. Landerholm
Latham & Watkins
1001 Pennsylvania Avenue, N.W.
Suite 1300
Washington, D.C. 20004
(202) 637-2200

THIS PAGE INTENTIONALLY LEFT BLANK

Table of Contents

APPLICATION	1
EXECUTIVE SUMMARY	3
1. INTRODUCTION	7
1.1. General Description of System Operation and Services.....	7
1.2. Points of Contact for Applicant.....	9
1.2.1. Name, Address, and Phone Number of Applicant.....	9
1.2.2. Name, Address, and Phone Number of Contact	9
1.3. Type of Authorization Requested.....	9
2. PUBLIC INTEREST CONSIDERATIONS.....	11
3. MARKET FOR SERVICES	15
3.1. Proposed Services	15
3.2. Broadcasting Information/Webcasting.....	15
3.3 Video Programming	17
3.4 Educational and Business Video.....	18
3.5 Kiosk Centers for Video Reception.....	20
4. SYSTEM DESCRIPTION.....	23
4.1. General Overview of the System	23
4.1.1 Spectrum.....	23
4.1.2 Terminals	24
4.1.3 Coverage	24
4.2. Frequency Plan	24
4.3. Emission Designators.....	32
4.4. Power Flux Density Compliance	33
4.4.1. V-Band Communications.....	33
4.4.2. Ku-Band Communications	34
4.4.2.1 FCC Rules	34
4.4.2.2 International Requirements.....	35
4.4.3. Ku-Band Telemetry	36
4.4.3.1. FCC Rules	36
4.4.3.2 International Requirements.....	37
4.4.4. Tracking Beacons	38
4.4.4.1 FCC Rules	38
4.4.4.2. International Requirements.....	38
4.5. Space Segment.....	39
4.5.1. Communications Subsystem	41
4.5.1.1. V-Band Subsystem.....	42
4.5.1.2. Ku-Band Subsystem	44
4.5.2 TDMA Switch.....	44

Table of Contents (cont'd)

4.6. Major Spacecraft Subsystems.....	44
4.6.1. Antennas	44
4.6.1.1. Uplink and Downlink Antennas.....	44
4.6.1.2. TT&C Antennas.....	46
4.6.1.3. Intersatellite Telescopes.....	46
4.6.2. Thermal Control Subsystem	46
4.6.3. Attitude Control Subsystem.....	47
4.6.3.1. Pointing.....	47
4.6.3.2. Reaction Wheels.....	47
4.6.3.3. Sensor Suite Positioner	48
4.6.4. Propulsion Subsystem	48
4.6.5. Electrical Power Subsystem.....	48
4.6.6. Telemetry, Tracking and Command Subsystem.....	48
4.6.6.1. Telemetry.....	51
4.6.6.2. Command.....	52
4.6.6.3. Tracking Beacons	53
4.6.7. Intersatellite Links.....	53
4.7. Number of Satellites	53
4.8. Orbit Considerations	54
4.9 Satellite Operational Lifetime.....	54
4.10. Earth Segment.....	55
4.10.1. Satellite Command and Control	55
4.10.2. Payload Management.....	56
4.10.3. Customer Equipment.....	56
4.11 Link Availability.....	57
4.11.1. Rain Effects.....	57
4.11.2. Cloud and Gaseous Effects	58
4.12. Launch Segment	58
5. INTERFERENCE ANALYSIS.....	59
5.1. SpaceCast™ System Spectrum.....	59
5.2. Interference and Sharing Analysis.....	61
5.2.1. Intra-Service Interference and Sharing.....	61
5.2.1.1 Fixed-Satellite Service.....	61
5.2.1.2 Inter-Satellite Service.....	62
5.2.2. Inter-Service Interference and Sharing.....	63
5.2.2.1 Radio Astronomy Service.....	63
5.2.2.2 Terrestrial Services.....	63
5.2.2.3 Earth Exploration-Satellite and Space Research Services	64
5.2.2.4 Radiolocation and Radionavigation Services.....	65
5.2.2.5 Broadcasting-Satellite Service.....	65
5.3. Spurious and Out-of-Band Emissions.....	65

Table of Contents (cont'd)

6. REGULATORY QUALIFICATIONS.....	67
6.1 Legal Qualifications.....	67
6.2 Compliance With Intelsat Article XIV.....	67
6.3 Non-Common Carrier Status	67
7. MILESTONE SCHEDULE.....	69
8. PROJECTED SYSTEM COST.....	71
9. FINANCIAL QUALIFICATIONS.....	73
10. ENGINEERING CERTIFICATION.....	75
11. CERTIFICATIONS.....	77
12. CONCLUSION.....	79
APPENDIX A: TRANSMISSION CHARACTERISTICS	81
APPENDIX B: INTERFERENCE ANALYSIS.....	89
APPENDIX C: ANTENNA COVERAGE	105
APPENDIX D: FINANCIAL REPORT	115

THIS PAGE INTENTIONALLY LEFT BLANK

Illustrations

Figure 1-1 SpaceCast™ System Key Features.....	8
Figure 3.2.3-1. U.S. Distance Learning and Business Television Revenues.....	18
Figure 4.2-1. Illustrative Frequency & Polarization Plan.....	26
Figure 4.2-2. V-Band Uplink (Earth-to-Space) Frequency and Polarization Plan	28
Figure 4.2-3. V-Band Downlink (Space-to-Earth) Frequency and Polarization Plan.....	29
Figure 4.2-4. Ku-Band Communications Uplink (Earth-to-Space) Frequency & Polarization Plan.....	30
Figure 4.2-5. Ku-Band Communications Downlink (Space-to-Earth) Frequency & Polarization Plan.....	31
Figure 4.5-1 Hughes High Power Satellite.....	41
Figure 4.5.1.1-1. V/Ku Band Repeater Block Diagram.....	43
Figure 4.6.6-1. TT&C Subsystem Block Diagram	50
Figure 4.10.1-1. Example of SpaceCast™ Satellites and Earth Segment	54
Figure 4.10.3-1. Family of Terminals	56
Figure C-1. V-Band Receive/Transmit Satellite Antenna Gain Contours. For both RHCP and LHCP. Maximum gain = 58 dBi, maximum G/T = 29.4 dB/K.....	104
Figure C-2. Ku-Band Receive/Transmit Elliptical Beam Contours. For both RHCP and LHCP. Maximum gain = 37 dBi, maximum G/T = 10.9 dB/K.	105
Figure C-3. V-Band Satellite Coverage at 39° W	106
Figure C-4. Ku-Band Satellite Coverage at 39° W	107
Figure C-5. V-Band Satellite Coverage at 60° W (Eastern U.S. Service).....	108
Figure C-6. Ku-Band Satellite Coverage at 60° W (Eastern U.S. Service).....	109
Figure C-7. V-Band Satellite Coverage at 125° W (Western U.S. Service).....	110
Figure C-8. Ku-Band Satellite Coverage at 125° W (Western U.S. Service).....	111
Figure C-9. V-Band Satellite Coverage at 155° E	112
Figure C-10. Ku-Band Satellite Coverage at 155° E	113

THIS PAGE INTENTIONALLY LEFT BLANK

Tables

Table 4.3-1 Emission Designators	33
Table 4.4.1-1. V-Band Communications Maximum Power Flux Densities.....	34
Table 4.4.2.1-1. FCC Ku-Band Communications Power Flux Densities.....	35
Table 4.4.2.2-1. International Ku-Band Communications Power Flux Densities (10.7-11.7 GHz).....	35
Table 4.4.2.2-2. International Ku-Band Communications Power Flux Densities (12.2-12.75 GHz).....	36
Table 4.4.3.1-1. FCC Ku-Band Telemetry Power Flux Densities.....	37
Table 4.4.3.2-1. International Ku-Band Telemetry Power Flux Densities (10.7-11.7 GHz).....	37
Table 4.4.3.2-2. International Ku-Band Telemetry Power Flux Densities (12.2-12.75 GHz).....	38
Table 4.4.4.1-1. FCC Ku-Band Beacon Power Flux Densities	38
Table 4.4.4.2-1. International V-Band Beacon Power Flux Densities.....	39
Table 4.4.4.2-2. International Ku-Band Beacon Power Flux Densities (10.7-11.7 GHz)	39
Table 4.4.4.2-3. International Ku-Band Beacon Power Flux Densities (12.2-12.75 GHz)	39
Table 4.5-1. SpaceCast™ Satellite Characteristics.....	40
Table 4.5.1-1. Communication Parameters	42
Table 4.6.6-1. T&C System Parameters.....	51
Table 4.11.1-1. V-Band Design Margins for Rain in Various Cities.....	58
Table 7-1. SpaceCast™ Major Milestones.....	69
Table 8-1. SpaceCast™ Investment	71
Table A-1-a. V-Band Link: New York U/L to Boston D/L - 1 m Receive Terminal.....	83
Table A-1-b. V-Band Link: New York U/L to Boston D/L - 0.45 m Receive Terminal.....	83
Table A-2. Ku-Band Link: Miami U/L to New York D/L - 1 m Receive Terminal	84
Table A-3-a V-Band Link: Tokyo U/L to Honolulu D/L - 2.5 m Terminals.....	85
Table A-3-b V-Band Link: Honolulu U/L to Seattle D/L - 2.5 m Terminals.....	85
Table A-4-a Ku-Band Link: Singapore U/L to Midway D/L - 2.5 m Terminals	86
Table A-4-b Ku-Band Link: Midway U/L to Seattle D/L - 2.5 m Terminals	86
Table A-5. Ku-Band Telemetry Link	87
Table A-6. Ku-Band Command Links.....	88
Table B-1. C/I Ratios for Various V-Band Scenarios.	92
Table B-2. C/I Ratios for Various Ku-Band Scenarios.	92
Table B-3. Uplink Parameter List for V-Band Interference Analysis	93
Table B-4. Downlink Parameter List for V-Band Interference Analysis.....	93
Table B-5. Uplink Parameter List for Ku-Band Interference Analysis	94
Table B-6. Downlink Parameter List for Ku-Band Interference Analysis.....	94
Table B-7. V-Band Interference Analysis: SpaceCast™ Interfering With System-X, Scenario #1 (2° separation)	95
Table B-8. V-Band Interference Analysis: SpaceCast™ Interfering With Expressway™, Scenario #2 (2° separation)	97
Table B-9. V-Band Interference Analysis: System-X Interfering With SpaceCast™, Scenario #3 (2° separation)	99
Table B-10. V-Band Interference Analysis: Expressway™ Interfering With SpaceCast™, Scenario #4 (2° separation)	101
Table B-11. Ku-Band Interference Analysis: SpaceCast™ Interfering With System-Y, Scenario #5 (2° separation)	103

THIS PAGE INTENTIONALLY LEFT BLANK

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of the Application of)
HUGHES COMMUNICATIONS, INC.)
For Authority to Launch and Operate)
SpaceCast™, an International)
Multimedia Satellite System)

File No:

Pursuant to §§ 308 and 309 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 308 and 309, Hughes Communications, Inc. (HCI), an indirect wholly-owned subsidiary of Hughes Electronics Corporation (HE), hereby requests authority to launch and operate SpaceCast™, a geostationary orbit (GSO) satellite system offering video and multimedia services in the V-band and Ku-band. The SpaceCast™ system will be comprised of a total of six satellites at four orbital positions interlinked via optical (laser) communication links.

SpaceCast™ will contain V-band and Ku-band service links, optical intersatellite links (ISLs), and telemetry, tracking, and command (TT&C) links. V-band communications will utilize the 47.2 to 50.2 GHz (Earth-to-space) and 39.5 to 42.5 GHz (space-to-Earth) bands. The Ku-band service links will utilize spectrum allocated for FSS in the planned, extended, and/or standard bands, or a combination thereof, depending on frequency availability at each SpaceCast™ orbital position. Specifically, HCI seeks authorization for 500 MHz of Ku-band spectrum within the 12.75-13.25 and 13.75-14.5 GHz (Earth-to-space) and 10.7-12.75 GHz (space-to-Earth) bands.

HCI acknowledges that certain portions of the Ku-band are already in use at certain of the orbital positions that HCI has proposed for SpaceCast™. HCI expressly does not seek authority to use any portion of the Ku-band at any orbital position where that portion is unavailable. The existing uses of portions of the Ku-band at different orbital positions and differences in the allocations for these bands are the reasons why HCI has specified a range of Ku-band frequencies currently allocated for the FSS of which it proposes to use 500 MHz at each orbital position.



.
r
r
r
r
r
r
r
r
r
r
r

EXECUTIVE SUMMARY

Hughes Communications, Inc. (HCI), an indirect wholly-owned subsidiary of Hughes Electronics Corporation (HE), hereby requests authority to launch and operate an international geostationary satellite system to be known as SpaceCast™. SpaceCast™ is a state of the art satellite system that will provide innovative, affordable, video and multimedia broadcast, and point-to-multipoint services in the United States and internationally.

SpaceCast™ serves the growing number of businesses and institutions who require the capability to distribute video and multimedia content to a diverse and often international clientele. With the development of Internet-related technologies and connectivity, video broadcasting is no longer solely the product of the media businesses that distribute video content and programming today. The emerging digital-age broadcasters include: "Webcasters" employing "push" technology to deliver personalized multimedia content without the customer having to search for it; niche programming providers seeking access to the increasingly crowded streams of video and multimedia content distribution; and public and private educational institutions seeking to expand their use of distance learning.

SpaceCast™, with flexibility derived from a unique architecture, will serve both new digital broadcasters and established video content distributors. The innovative SpaceCast™ system design, which enables the use of small beam sizes and small dishes, allows a content distributor to uplink from a 2.5 meter dish in any location, even the most remote, and to downlink to a variable sized coverage area

that best suits its needs. The small uplink dish eliminates the expenses associated with the construction of large feeder link facilities and the backhaul of signals from the content development location to the feeder-link facility. This reduction in cost will make satellite broadcasting less expensive and more accessible, thereby allowing many new broadcasters, small and large alike, to utilize satellite technology for video and multimedia content distribution.

The additional flexibility provided by a variable sized coverage area -- broadcasters can select a coverage area ranging in size from a city to a larger area to the entire contiguous U.S. and beyond -- allows broadcasters to tailor the reach of their signal to the nature of their content and audience. This ability to target broadcast areas will vastly expand the selection of video and multimedia content available to customers beyond that which today's many channel universe allows. SpaceCast™ users will have the flexibility to select from a family of terminals ranging from a 45 cm (18 inches) or 1 meter (39 inches) receive-only dish to a 2.5 meter (approximately 8 feet), two-way dish, depending on the services and transmission rates they desire. Ultimately, the mix of channel type, coverage, and dish size will be determined by the market and advances in compression technology.

To further serve the video and multimedia distribution market, HCI has designed SpaceCast™ to offer a wide range of transmission rates, from multiplexed 384 kbps -- used for compressed video -- to 155 Mbps -- for high speed, high capacity applications, such as high resolution video cache services -- and a wide variety of rates in between. In addition to providing a greater range of service choices for the